

Operational Energy Requirements

CAPT James Goudreau

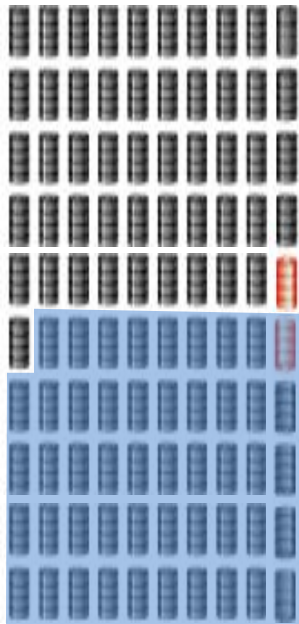
Director, Navy Energy Coordination Office (N45E)

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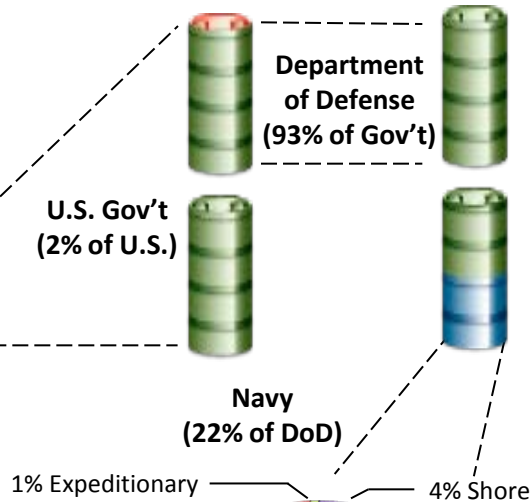
Navy Petroleum Consumption

U.S. Petroleum Consumption



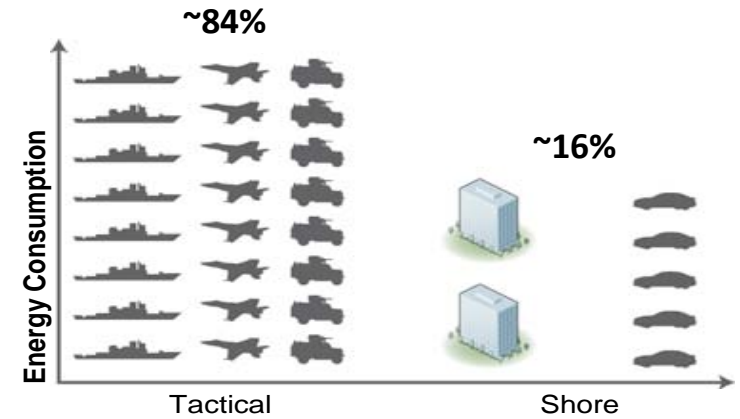
Non-Domestic
Sources

U.S. Gov't. Petroleum Consumption

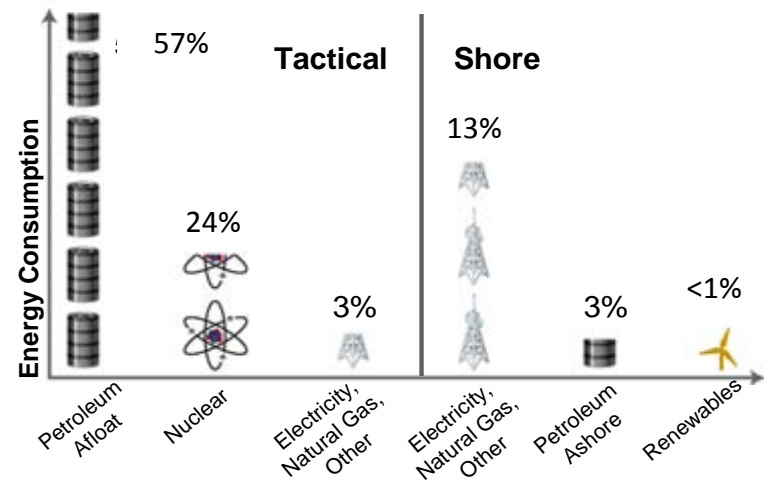


Navy Petroleum Consumption

Overall Energy Consumption



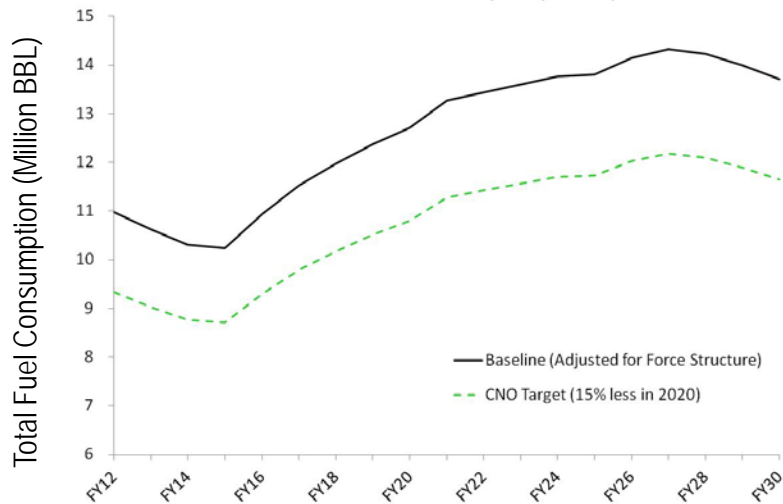
Overall Energy Sources



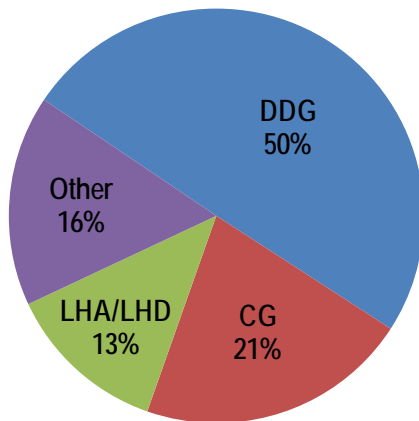
Energy: Our Greatest Combat Enabler... and Greatest Vulnerability

Fuel Consumption: Maritime and Aviation

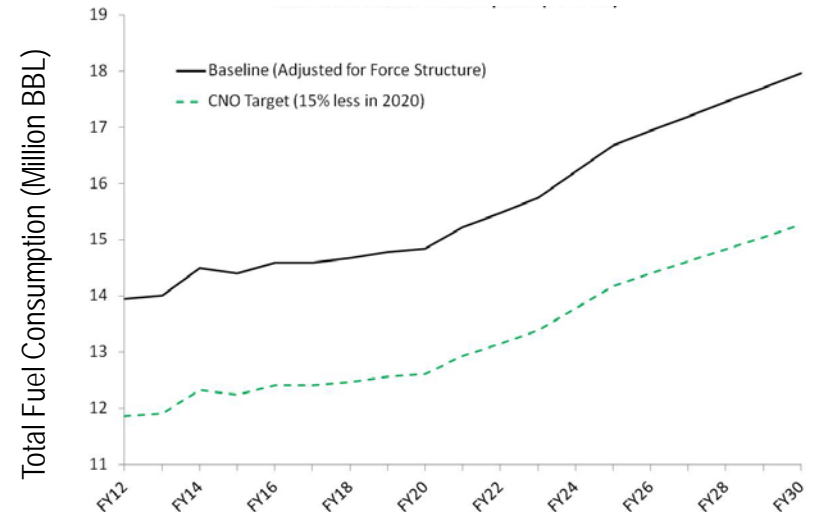
Tactical Maritime Fuel Consumption



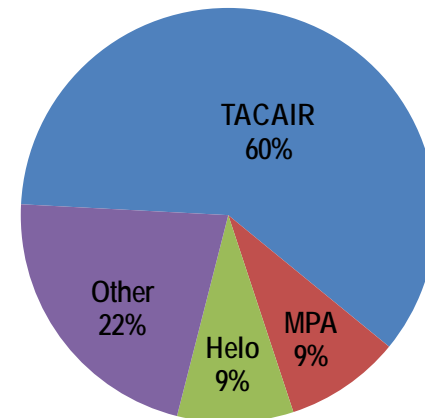
Major Fuel Consumers in FY11
(% of Tactical Maritime Fuel Consumption)



Aviation Fuel Consumption



Major Fuel Consumers in FY11
(% of Aviation Fuel Consumption)



Navy's fuel consumption behavior is forecast to increase

Capability but at what Cost?

MARITIME

Energy Dense Liquid
Fuel Past 2060



70% increase



??% increase



AVIATION

Energy Dense Liquid
Fuel Past 2060



25% increase



60% increase

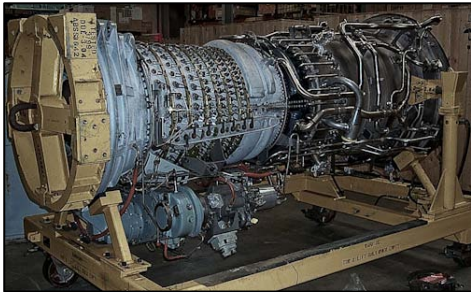


110% increase



Navy's maritime and aviation assets will require energy dense liquid fuel for at least the next 5 decades

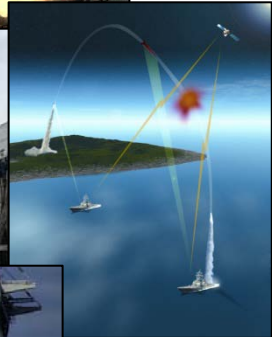
Increased Effort Necessary



Power Generation



Conversion, Storage & Distribution



Advanced Weapons Systems

S&T Goals

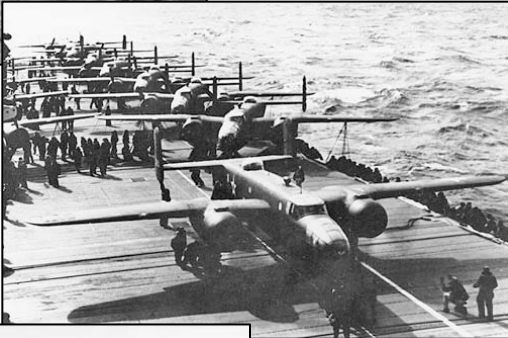
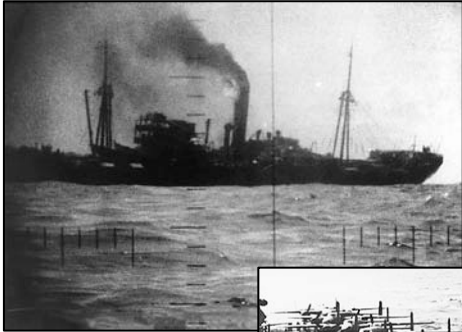
Miniaturized
Lightweight
Ruggedized

Enables

Tactical Gains

Increased
Combat
Capability

Learn From History



- ❖ Practicality
- ❖ Scalability
- ❖ Portability
- ❖ Vulnerability



Be ingenious...but don't create a new problem